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10/662,945	09/15/2003	Thomas F. Papallo	138561	2025

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EXAMINER	
CABRERA, ZOILA E	

ART UNIT	PAPER NUMBER
2125	

DATE MAILED: 07/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/662,945	PAPALLO ET AL.	
	Examiner	Art Unit	
	Zoila E. Cabrera	2125	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 April 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14,16 and 19-74* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14,16 and 19-74* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Final Rejection

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3-4, 6-11, 29-37, 39-46, 49, 51-58, 60, 62-69 and 71 are rejected under 35 U.S.C. 102(b) as being anticipated by **Sumic (5,568,399)**.

Regarding claim 1, **Sumic** discloses a method of protecting a circuit comprising: monitoring a zone of protection of the circuit to determine a first topology (Col. 5, lines 59-66; Col. 6, lines 6-30; Figs. 3a-3b); adjusting a zone protective function for said zone of protection based at least in part upon changes to said first topology (Col. 6, lines 58-61, i.e., the protective device schema data structure is dynamically maintained and updated following any changes to the distribution system functional topology during the operation of the power distribution system), said zone protective function detecting a fault in said zone of protection (Col. 5, lines 59-67; Col. 7, lines 25-39); and performing said zone protective function on said zone of protection to detect said fault (Col. 6, lines 41-49; Col. 5, lines 59-67; Col. 7, lines 40-43);

As for claims 29, 39, 51 and 62, **Sumic** further discloses,

29. A protection system for coupling to a circuit having a circuit breaker (Col. 5, lines 17-18), the system comprising: a control processing unit being communicatively coupleable to the circuit (Fig. 2, element 42), so that said control processing unit can monitor a topology of the circuit (Fig. 5A, steps 72, 74), said control processing unit defining a zone of protection for at least a portion of the circuit based at least in part upon said topology (Col. 5, lines 59-66), and said control processing unit redefining said zone of protection based at least in part upon changes to said topology (Col. 6, lines 58-61, i.e., the protective device schema data structure is dynamically maintained and updated following any changes to the distribution system functional topology during the operation of the power distribution system), wherein said control processing unit adjust a zone protective function for said zone of protection based at least in part upon changes to said topology (Col. 6, lines 58-61, i.e., the protective device schema data structure is dynamically maintained and updated following any changes to the distribution system functional topology during the operation of the power distribution system), said zone protective function detecting a fault in said zone of protection (Col. 5, lines 59-67; Col. 7, lines 25-39).

39. A protection system for coupling to a circuit having a zone of protection and a circuit breaker (Col. 5, lines 17-18), the system comprising: a control processing unit being communicatively coupleable to the circuit so that said control processing unit can

monitor a topology of the zone of protection (Fig. 2, element 42), said control processing unit adjusting a zone protective function for the zone of protection based at least in part upon said topology (Col. 6, lines 44-61; Col. 6, lines 19-23), and said control processing unit performing said zone protective function to detect a fault in the zone of protection (Col. 5, lines 59-67).

51. A power distribution system comprising: a circuit (Fig 3a); and a control processing unit communicatively coupled to said circuit (Fig. 2, element 42; Col. 5, lines 47-66), wherein said control processing unit determines a topology of said circuit (Col. 5, lines 59-66; Col. 6, lines 6-30; Figs. 3a-3b), wherein said control processing unit defines a zone of protection for at least a portion of said circuit based at least in part upon said topology (Col. 5, lines 59-66), and wherein said control processing unit redefines said zone of protection based at least in part upon changes to said topology (Col. 6, lines 58-61), and wherein said control processing unit adjust a zone protective function for said zone of protection based at least in part upon changes to said topology (Col. 6, lines 58-61, i.e., the protective device schema data structure is dynamically maintained and updated following any changes to the distribution system functional topology during the operation of the power distribution system), said zone protective function detecting a fault in said zone of protection (Col. 5, lines 59-67; Col. 7, lines 25-39).

62. A power distribution system comprising: a circuit having a zone of protection (Figs 4A –4B); and a control processing unit being communicatively coupled to said circuit (Fig. 2, element 42; Col. 5, lines 47-66), wherein said control processing unit monitors a

topology of said zone of protection (Fig. 5A, steps 72, 74), wherein said control processing unit adjusts a zone protective function for said zone of protection based at least in part upon said topology (Col. 6, lines 44-61; Col. 6, lines 19-23), and wherein said control processing unit performs said zone protective function to detect a fault in said zone of protection (Col. 5, lines 59-67).

As for claims 3-4, **Sumic** discloses,

3. The method of claim 1, further comprising determining said first topology based at least in part upon a state for each of a plurality of power switching devices in said zone of protection, said state being either opened or closed (Col. 5, lines 30-34, status of the power grid; Col. 6, lines 1-6, i.e., the distribution system topology used in the outage determination program describes the function topology or *connectivity* of the power distribution grid).

4. The method of claim 3, further comprising opening at least one of said plurality of power switching devices in said zone of protection based at least in part upon said zone protective function (Col. 5, lines 23-26).

As for claims 6-11, **Sumic** discloses,

6. The method of claim 3, further comprising: monitoring electrical parameters of said zone of protection; and communicating said electrical parameters over a network to a microprocessor (Col. 7, lines 4-13).

7. The method of claim 6, wherein said microprocessor applies an algorithm to said electrical parameters to perform said zone protective function (Figs. 5A-5B).

8. The method of claim 7, wherein said microprocessor uses a coefficient of said algorithm in applying said zone protective function, and wherein said microprocessor adjusts said coefficient based at least in part upon said changes to said first topology (Col. 10, lines 9-47).

9. The method of claim 6, wherein said microprocessor is configured to operate each of said plurality of power switching devices in said zone of protection (Col. 9, lines 35-55).

10. The method of claim 6, further comprising generating an open command by said microprocessor in response to said electrical parameters, communicating said open command from said microprocessor to an actuator operably connected to at least one of said plurality of power switching devices, and opening said at least one of said plurality of power switching devices in response to said open command (Col. 5, lines 23-28).

11. The method of claim 6, further comprising sensing said electrical parameters with a sensor, communicating signals representative of said electrical parameters to a module, and communicating said signals to said microprocessor, wherein said module, said sensor and said microprocessor are communicatively coupled (Col. 7, lines 4-13).

As for claims 30-32, **Sumic** discloses,

30. The system of claim 29, further comprising a network in communication with said control processing unit and the circuit (Fig. 2; Col. 5, lines 47-66).

31. The system of claim 29, wherein said control processing unit operatively controls the circuit breaker (Col. 5, lines 23-28).

32. The system of claim 31, wherein said control processing unit receives parameter signals representative of electrical parameters of the circuit Col. 7, lines 4-13), and wherein said control processing unit opens the circuit breaker in response to said parameter signals if a fault is detected in the circuit (Col. 5, lines 23-28).

As for claims 33-34, the same citations applied to claims 7-8 above apply as well for these claims.

As for claim 35, **Sumic** discloses,

35. The system of claim 32, wherein said electrical parameters further comprise a state of the circuit breaker, said state being either opened or closed, and wherein said topology is monitored by said control processing unit based at least in part upon said state of the circuit breaker (Col. 5, lines 23-29 and lines 59-66).

As for claims 36-37, 46, 49, 58, 69, and 71 the same citations applied to claims 10-11 above apply as well for these claims.

As for claims 40-42, 52-55, and 63-65, the same citations applied to claims 30-32 above apply as well for these claims.

As for claims 43-44, 57, 60, and 66-67, the same citations applied to claims 7-8 above apply as well for these claims.

As for claim 45, 56, and 68, the same citations applied to claim 35 above apply as well for these claims.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2, 5, 14, 16, 19-26, 38, 50, 59, 61, 70 and 74 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Sumic (5,568,399)** in view of **Finn et al. (US 6,728,205 B1).**

Sumic discloses the limitations of claims 1, 51, and 62, and further discloses:

Regarding claim 14,

14. A method of protecting a circuit comprising: monitoring the circuit to determine a first topology (Col. 5, lines 59-66; Col. 6, lines 6-30; Figs. 3a-3b); and defining a zone of protection for at least a portion of the circuit based at least in part upon changes to said first topology (Col. 6, lines 58-61, i.e., the protective device schema data structure is dynamically maintained and updated following any changes to the distribution system functional topology during the operation of the power distribution system); performing a zone protective function on said zone of protection to detect a fault; Col. 6, lines 19-23).

As for claim 16, **Sumic** discloses,

As for claim 16, the same citations applied to claim 4 above apply as well for this claim (see also Col. 6, line 62 6o Col. 7, line 13; Col. 5, lines 59-67).

As for claim 19, **Sumic** discloses,

19. The method of claim 17, further comprising: determining said first topology based upon a state for each of a plurality of power switching devices in the circuit, said state being either opened or closed; and opening at least one of said plurality of power switching devices based at least in part upon said zone protective function (Col. 6, line 62 to Col. 7, line 13; Col. 5, lines 59-67).

As for claims 21-26, the same citations applied to claims 6-11 above apply as well for these claims.

However, **Sumic** does not disclose some limitations of claim 14 and the limitations of claims 2, 5, 20, 38, 50, 59, 61, 70 and 74. But **Finn** discloses such limitations as follows:

As for claim 2,

2. The method of claim 1, further comprising: determining a second topology of the circuit based at least in part upon a state for each of a plurality of power switching devices in the circuit, said state being either opened or closed (Fig. 8, step 194, i.e. Generate more subgraphs? , please note that each subgraph corresponds to a portion of a topology of the circuit; Col. 1, lines 44-49, please note that when link or node in a path fails communication is disrupted corresponds to an open state; and defining said zone of protection based at least in part upon said second topology (Fig. 10, Define reverse subgraph; Fig. 8, step 198, Generate a next subgraph from the remaining network; Col. 18, lines 43-52; Col. 18, lines 55-66).

As for claims 5, 20, 38, 50, 59 and 70, **Finn** discloses

determining a dynamic delay time for opening said at least one of said plurality of power switching devices in said zone of protection; and opening said at least one of said plurality of power switching devices in said zone of protection after said dynamic delay time has elapsed Col. 2, lines 58-61; Col. 3, lines 29-34).

As for claim 14,

14. monitoring a second topology for said zone of protection; and adjusting said zone protection function based at least in part upon changes to said second topology (Fig. 2, each tree corresponds to a topology; Col. 22, lines 54 to Col. 23, lines 27).

As for claims 61 and 74, **Finn** further discloses,

61. The system of claim 51, wherein said circuit comprises a first circuit breaker and a second circuit breaker, said first circuit breaker being downstream of said second circuit breaker , said first circuit breaker having a first current running therethrough and first pickup settings, wherein said control processing unit causes said second circuit breaker to enter a pickup mode as a function of said first current and said first pickup settings when a fault is detected downstream of said first circuit breaker (Figs. 4-4B, Col 22, lines 54-67; Col. 15, lines 57- Col. 16, line 11; please note that any node corresponds to a circuit breaker and when a fault is detected between nodes 1 and 2 then node 8 enters a pickup mode as shown in Fig. 4A)..

Therefore, it would have been obvious to a person of the ordinary skill in the art at the time the invention was made to combine the teachings of **Sumic** with the automatic protection switching system of **Finn** because it would provide an improved system for generating subgraphs on node and edge redundant networks having an arbitrary network topology when a fault is detected (Abstract; Col. 1, lines 15-20; Col. 6, lines 38-44).

3. Claims 12-13, 47-48 and 72-73 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Sumic (5,568,399)** in view of **Tracy Nelson et al. (US 2005/0251296 A1).**

Sumic discloses the limitations of claims 1, 3, 6, 11, 14, 15, 17, 19, 21, 26, 39, 41, 42, 46, 62, 65, and 71. **Sumic** further discloses adjusting said zone protective functions based upon changes in said topology (See citations of Claim 1). However, **Sumic** does not disclose the limitations of claims 12-13, 47-48 and 72-73, but **Tracy** discloses such limitations as follows:

monitoring said sensor to detect an error in sensing said electrical parameters; and adjusting said zone protective function based at least in part upon the detection of said error ([0082], time stamps errors; [0126]);

monitoring said module to detect an error in communicating said signals to said microprocessor; and adjusting said zone protective function based at least in part upon the detection of said error ([0080]-[0081], integrity check; [0087]; [0107]; [0126]).

Therefore, it would have been obvious to a person of the ordinary skill in the art at the time the invention was made to combine the teachings of **Sumic** with the method and apparatus for control of an electric power distribution system in response to circuit abnormalities of **Tracy** because it would provide a more efficiently and flexible system to respond to abnormalities to reconfigure and restore service to end customers by including error checking in the system as taught by Tracy (Abstract; [0081-[0087]).

4. Claims 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Sumic (5,568,399)** and **Finn et al. (US 6,728,205 B1)** and further in view of **Tracy Nelson et al. (US 2005/0251296 A1).**

As for claims 27-28, **Sumic** and **Finn** disclose the limitations of claims 14, 19, 21, 26 above. **Sumic** further discloses adjusting said zone protective functions based upon changes in said topology (See citations of Claim 1). However, **Sumic** and **Finn** does not disclose the limitations of claims 27-28, but **Tracy** discloses such limitations as follows:

monitoring said sensor to detect an error in sensing said electrical parameters; and adjusting said zone protective function based at least in part upon the detection of said error ([0082], time stamps errors; [0126]);

monitoring said module to detect an error in communicating said signals to said microprocessor; and adjusting said zone protective function based at least in part upon the detection of said error ([0080]-[0081], integrity check; [0087]; [0107]; [0126]).

Therefore, it would have been obvious to a person of the ordinary skill in the art at the time the invention was made to combine the teachings of **Sumic** and **Finn** with the method and apparatus for control of an electric power distribution system in response to circuit abnormalities of **Tracy** because it would provide a more efficiently and flexible system to respond to abnormalities to reconfigure and restore service to end customers by including error checking in the system as taught by Tracy (Abstract; [0081-[0087]).

Response to Arguments

5. Applicant's arguments filed April 27, 2006 have been fully considered but they are not persuasive. Applicant contends that Sumic fails to disclose or suggest adjusting a zone protective function for the zone of protection based at least in part upon the monitored topology or changes to the topology, wherein the zone protective function detects a fault in the zone of protection. Examiner disagrees since Sumic discloses such limitations (Col. 6, lines 58-61, i.e., the protective device schema data structure is dynamically maintained and updated following any changes to the distribution system functional topology during the operation of the power distribution system; Col. 5, lines 59-67; Col. 7, lines 25-39). Please note that Sumic discloses that "the present invention determine the location of protective devices that possibly operated due to faults in the power distribution grid using distribution system information, such as distribution system topology and protective device schema. This information, in turn, is used to isolate the probable cause of the power outage". There is an adjustment to the topology when isolating a portion of the system.

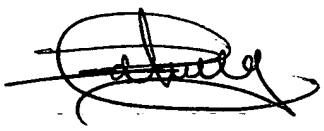
Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning communication or earlier communication from the examiner should be directed to Zoila Cabrera, whose telephone number is (571) 272-3738. The examiner can normally be reached on M-F from 8:00 a.m. to 5:30 p.m. EST (every other Friday).

If attempts to reach the examiner by phone fail, the examiner's supervisor, Leo Picard, can be reached on (571) 272-3749. Additionally, the fax phones for Art Unit 2125 are (571) 273-8300. Any inquiry of a general nature or relating to the status of this application should be directed to the group receptionist at (703) 305-9600.



Zoila Cabrera
Patent Examiner
7/10/06